REMARKS

Examiner's Rejections and Objections

The foregoing Amendment and remarks which follow are responsive to the final Office Action mailed February 27, 2002. In that Office Action, the Examiner rejected Claims 16-25 under 35 U.S.C. §103(a) as being unpatentable over the Sagawa et al. reference ("Sagawa"). Claims 16-23 were rejected under 35 U.S.C. §102(b) as being anticipated by the Millar et al. reference ("Millar"). Lastly, the Examiner rejected Claims 16-25 under 35 U.S.C. §103(a) as being unpatentable over Millar.

Amended Independent Claims 16 and 20

1. The Present Invention

Applicant has amended base Claims 16 and 20 which are believed to contain distinguishable features to avoid the cited prior art. Amended base Claims 16 and 20 recite a metal curing fixture comprising a "polymer particulate and a high curing temperature powder adhesive, the adhesive having a curing temperature lower than a melting temperature of said particulate to adhere said particulate to the steel surface . . . to form an acid-impervious barrier at temperatures above 500°F to mitigate the acid of the steel surface from penetrating therethrough."

In particular, the metal curing fixture of the present invention mitigates the acid content of the steel surface from penetrating through its acid-impervious barrier formed above 500°F.

More specifically, the present curing fixture comprises a deposited mixture which forms such barrier to allow resin-impregnated fibers to be laid thereupon, thereby fabricating final composite parts without being subjected to any acid content from the steel surface. This acid-impervious barrier may be formed by mixing together an acid-impervious polymer particulate (e.g., polyamide) with a high curing temperature powder adhesive. In this respect, the curing of the powder adhesive should occur at a temperature below the temperature tolerance of the polymer particulate. By allowing the powder adhesive to be cured first, it permits the polymer particulate to adhere to the steel surface so as to create the desired acid-impervious barrier as described above. It should be emphasized that the use of a high curing temperature adhesive ensures that it remains intact, and not simply melt away, when the laid-up fibers undergo their own curing process at elevated temperatures, namely, above 500°F.

Applicant submits that the cited references, as understood, do not teach or suggest such feature. As such, it would be unobvious to one of ordinary skill in the art to develop a fixture comprising an acid-impervious barrier formed at temperatures above 500°F by adhering a polymer particulate with a first heat-curing powder adhesive in order to mitigate the acid content of the steel surface from penetrating therethrough. More specifically, none of the cited references are understood to teach the concept of solely

curing the adhesive at the specified temperature to create the resulting acid-impervious barrier which will remain intact during the subsequent part curing process at elevated temperatures.

2. The Sagawa Et Al. Reference

For instance, Sagawa first fails to disclose a powder adhesive with a curing temperature that is below the temperature tolerance of the polymer particulate. Rather, Applicant understands Sagawa to use resin layer "treated with solvent so as to form an adhesive layer." (Column 3, lines 44-45). This adhesive layer is then believed to adhere the particulate via pressure-bonding methods, that is, the particulate is pressed or pushed "into the adhesive layer, thereby bonding . . . firmly with said adhesive layer." (Column 3, lines 64-66). Applicant realizes that Sagawa talks about the concept of "fusion" to strengthen the bonding power of its particulate. However, the fusion is between particulate-to-particulate (and not particulate-to-adhesive), and requires "heating to a temperature higher than the softening point of the powder as well as higher than the temperature at which the powder particles begin to coalesce with each other." (Column 5, lines 45-47). This is highly distinguishable from the powder adhesive of the present invention which demands to be cured first so that it may adhere the particulate to the steel surface. Therefore, Applicant submits that Sagawa does not only fail to disclose the powder adhesive having a curing temperature that is below the

temperature tolerance of the polymer particulate, but also the concept of first and solely curing the adhesive for bonding purposes.

Moreover, Sagawa is not understood to even remotely describe an acid-impervious barrier which is formed above 500°F. Applicant believes that any curing process illustrated in Sagawa for any purpose is significantly below the 500°F. This is evidenced by Sagawa's experimental results which explicitly and clearly mark the allowable curing temperature range to be between 140°C-180°C. (See, Example 1 - 170°C; Example 2 - 140°C to 180°C; Example 3 - no temperature; Example 4 - 140°C; Example 5 - 150°C; Example 6 - 150°C; Example 7 - 130°C; Example 8 - 150°C, 130°C and 160°C). As such, Applicant submits that Sagawa not only fails to disclose an acid-impervious barrier formed above 500°F, but its invention as a whole is not even subjected to a temperature close to that range.

In addition, Applicant believes that the objective of Sagawa's invention is not to mitigate the acid content of the steel surface, or any surface for that matter, from penetrating through its acid-impervious barrier. Moreover, Sagawa is not believed to teach a powder adhesive which may remain intact despite being subjected to later part curing process above 500°F. Rather, as understood, Sagawa is simply directed to fabricating industrial coatings for parts and products. Applicant submits that nowhere in Sagawa is there even a slight reference to making its coatings for the

purpose of preventing surface acid contents from penetrating therethrough while remaining intact at elevated temperatures of later part curing process.

3. The Millar Et Al. Reference

Like Sagawa, Applicant believes that Millar also fails to disclose a powder adhesive with a curing temperature that is below the temperature tolerance of the polymer particulate. Contrary to the present invention, Millar is not understood to use curing process for adhering its particulate. Rather, Millar teaches the concept of electrostatic coating operation which produces the phenomenon of its "formation of stratified layers of different powders adhering to the substrate because of the electrostatic charge." (Column 3, lines 45-47). More specifically, Millar states that "because of the charge differential between the different powders, the powders are preferentially attracted to the substrate during the electrostatic coating operation." (Column 2, lines 61-63). After this adherence process, the coating of Millar is then cured to immobilize its coating compositions to transform into a integral coating based upon the respective dielectric constants. (See, Column 3, lines 47-63). Thus, Applicant submits that Millar fails to disclose the powder adhesive with a lower curing temperature for adhering the polymer particulate through the curing process.

Furthermore, Millar is not understood to specifically disclose

an acid-impervious barrier formed above 500°F. As noted above, Millar utilizes electrostatic operations for adhering, and merely resorts to curing for integralizing the different compositions based upon the dielectric constants. Even assuming otherwise, Millar's actual curing temperature range of approximately 300°F to 420°F is notably below than above 500°F. (See, Examples 1-8). Applicant recognizes that Miller broadly states that the curing temperature may range from about 140°F to 1500°F. However, Applicant respectfully submits that such language does not provide an enabling disclosure as to the workable curing temperatures, particularly with respect to the actual conducted experiments shown in its examples.

Additionally, Applicant believes that the objective of Millar's invention is different from that of the present invention. Simply put, and as understood, Millar's objective "relates to a process for electrostatically applying a multilayer coating to substrates in one step," which is unrelated to the present invention's objective of mitigating the acid content of the steel surface from penetrating through its acid-impervious barrier which may remain intact at elevated temperatures (above 500°F) of later part curing process. (Column 2, lines 39-41). Applicant cannot find any disclosure in Millar as to fabricating coatings for the purpose of mitigating surface acid contents from penetrating therethrough.

Applicant respectfully submits that amended base Claims 16 and 20 are novel and unobvious in view of the cited prior art references, and thus allowable. Dependent Claims 17-19 are further limitations of the amended base Claim 16, whereas dependent Claims 21-25 are further limitations of the amended base Claim 20. Insofar as the amended base Claims 16 and 20 are believed to be allowable, their respective dependent Claims 17-19 and 21-25 are also believed to be allowable.

For the foregoing reasons, Applicant respectfully requests reconsideration of the rejections under 35 U.S.C. §102(b) and §103(a).

<u>Request for Allowance</u>

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned <u>"Version with markings to show changes made."</u>

On the basis of the foregoing, Applicant respectfully submits that all the stated grounds of rejections have been overcome, and that Claims 16-25 are in condition for allowance. Entry of the proposed amendment and an early Notice of Allowance is therefore respectfully requested.

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Should the Examiner have any suggestions for expediting allowance of the application, the Examiner is invited to contact Applicant's representative at the telephone number listed below.

Respectfully submitted,

Date: March 26, 2002

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Version With Markings To Show Changes Made

IN THE CLAIMS:

Please amend the following claims:

16. (Twice Amended) A metal structure comprising [a] an acid containing steel surface having deposited thereon an adhesive mixture of an acid-impervious polymer particulate and a high curing temperature powder adhesive [adhesively operational only upon curing and so cured], the adhesive having a curing temperature lower than a melting temperature of said particulate to adhere said particulate to the steel surface after deposition of said mixture on the steel surface, the adhesive mixture being operative to form an acid-impervious barrier at temperatures above 500°F to mitigate the acid of the steel surface from penetrating therethrough.

20. (Twice Amended) A metal curing fixture comprising [a] an acid containing steel surface having deposited thereon a mixture of an acid-impervious polymer particulate and a high curing temperature powder adhesive [adhesively operational only upon curing and so cured], the adhesive having a curing temperature lower than a melting temperature of said particulate to adhere said particulate to the steel surface after deposition of said mixture on the steel surface, the adhesive mixture being operative to form an acid-impervious barrier at temperatures above 500°F to mitigate the acid of the steel surface from penetrating therethrough.